# DENGUE

1. **Agent**: Dengue 1, 2, 3, and 4, four serologically related viruses.

2. **Identification:**

   a. **Symptoms**: Acute onset with fever, headache, body ache and often a maculopapular rash. Illness generally is self-limited and lasts about one week. Minor or severe bleeding manifestations occasionally occur. Dengue hemorrhagic fever, also called dengue shock syndrome, is a distinct clinical entity seen mostly in children with plasma leakage as its major finding. A platelet count < 100,000 and evidence of hemoconcentration are required for the diagnosis. Dengue shock syndrome frequently is fatal unless supportive treatment is given.

   b. **Differential Diagnosis**: Dengue is easily confused in non-epidemic situations with common viral illnesses, e.g., enterovirus infection, influenza, measles, and rubella. Dengue can also resemble endemic WNV fever and flea-borne murine typhus. Dengue may be confused with chikungunya fever in travelers returning from chikungunya fever-endemic or outbreak areas. Dengue hemorrhagic fever (dengue shock syndrome) may resemble bacterial sepsis, e.g., meningococcemia or rickettsial disease.

   c. **Diagnosis**: Virus may be isolated from acute serum or detected by PCR; demonstration of a 4-fold antibody rise by testing paired sera (EIA hemagglutination inhibition, complement fixation) may also confirm the diagnosis.

3. **Incubation**: Usually 4-7 days, range 3-14 days.

4. **Reservoir**: Humans and mosquitoes. In west Africa and southeast Asia, monkeys may also serve as reservoirs.

5. **Source**: The mosquito becomes infectious 8-12 days after the viremic blood meal and remains so for life.

6. **Transmission**: Dengue virus is transmitted by the bite of infected *Aedes* mosquitoes, principally *A, aegypti*. *A. albopictus*, recently introduced to the U.S. from Asia, has the potential to become an important vector in this hemisphere.

7. **Communicability**: Not directly communicable from person to person. Patients are usually infective to mosquitoes from shortly before to the end of the viremic period, an average of about 3-5 days.

8. **Specific Treatment**: None. Aspirin may exacerbate bleeding symptoms. Patients with dengue shock syndrome should be hospitalized and treated vigorously with fluid support.

9. **Immunity**: Permanent immunity for a specific virus, but infection with other serotypes can occur.

**REPORTING PROCEDURES**

1. Report any cases or suspected cases by telephone immediately to ACDC or Morbidity Unit (Title 17, Section 2500, *California Code of Regulations*).

2. **Report Forms:**

   **DENGUE CASE REPORT (CDPH 8670)**

3. **Epidemiologic Data:**

   a. Place of residence (be specific with regard to address, city and state) and travel history during the 10 days prior to onset of illness. A history of travel is important in interpreting results of serologic test.

   b. History of mosquito bites, noting time of day of bites. (*Aedes* mosquitoes are daytime biters.)

   c. Additional cases among household members, neighbors, fellow travelers.

d. Previous dengue infections, and yellow fever and Japanese B encephalitis vaccination status.

**CONTROL OF CASE, CONTACTS & CARRIERS**

Investigate within 24 hours so that information can be shared with appropriate state or international vector control agencies. Telephone ACDC.

**CASE:**

**Precautions**: Patients should stay in a room with window screens for at least 5 days after onset.

**CONTACTS:** No specific measures other than case finding and education. No vaccine is presently available.

**PREVENTION-EDUCATION**

1. Reduce exposure to mosquitoes by using protective clothing, repellents, and avoid outdoor exposure at dawn and dusk.

2. Remove water on a regular basis from potential mosquito larval habitats, e.g., potted plants, old tires and pet water bowls.

**DIAGNOSTIC PROCEDURES**

Clinical and epidemiologic history is required to aid the laboratory in test selections.

1. **Serology**: Paired acute and convalescent venous or capillary sera recommended.

   **Container**:
   Red top or serum separator tube (SST, a red/gray top Vacutainer tube).

   **Laboratory Form: CDPH VRDL Specimen Submittal Form**

   **Exam Requested:** Dengue serology.

   **Material:** Whole clotted blood or serum. Allow whole blood to clot at room temperature for a minimum of 30 minutes and centrifuge.

   **Amount**: 5-7 mL blood.

   **Storage**: Samples should be transported on cold packs as soon as possible following collection. If samples cannot be transported immediately, they may be held at 4-8°C for up to 72 hours before shipping. Otherwise, specimens should be frozen at -70°C and shipped on dry ice.

   **Remarks**: Collect first (acute) blood as early as possible, preferably within 5 days after onset. Collect second (convalescent) blood 10-14 days after first blood is drawn. Label all specimens with name of patient. Testing for Chikungunya recommended.

2. **PCR**: Blood samples collected within the first 5 days of illness must be transported immediately under refrigeration to the Public Health Laboratory for shipment to the State

   **Container**:
   Red top or serum separator tube (SST, a red/gray top Vacutainer tube).

   **Laboratory Form**: **CDPH VRDL Specimen Submittal Form**

   **Exam Requested:** Dengue PCR.
   **Material:** Whole clotted blood or serum. Allow whole blood to clot at room temperature for a minimum of 30 minutes and centrifuge.

   **Amount**: 5-7 mL blood.

   **Storage**: Samples should be transported on cold packs as soon as possible following collection. If samples cannot be transported immediately, they may be held at 4-8°C for up to 72 hours before shipping. Otherwise, specimens should be frozen at -70°C and shipped on dry ice. Testing for Chikungunya recommended.